

OPERATING INSTRUCTIONS
MODEL HH803U
SINGLE INPUT K/J
DIGITAL THERMOMETER

1 YEAR
WARRANTY

CE



MADE IN TAIWAN

INTRODUCTION

This instrument is a 5 digit, compact-sized portable digital thermometer designed to use external K type and J type thermocouples. Temperature indication follows Reference Temperature/Voltage Tables (N.I.S.T. Monograph 175 Revised to ITS-90) for K-type and J-type thermocouples. One K-type thermocouple is supplied with the thermometer.

SAFETY INFORMATION

It is recommended that you read the safety and operation instructions before using the thermometer.

WARNING

To avoid electrical shock, do not use this instrument when working voltages at the measurement surface over 24V AC or DC.

WARNING

To avoid damage or burns, do not make temperature measurement in microwave ovens.

CAUTION

Repeated sharp flexing can break the thermocouple leads. To prolong lead life, avoid sharp bends in the leads, especially near the connector.

Input Connector:

Accepts standard miniature thermocouple connectors (flat blades spaced 7.9mm, center to center).

ENVIRONMENTAL

Ambient Operating Ranges:

0°C to 50°C (32°F to 122°F) <70% R.H.

Storage Temperature:

-20°C to 60°C (-4°F to 140°F) <80% R.H.

GENERAL

Display: 5 digit liquid crystal display (LCD).

Overload: "----" or "OL" is display.

Battery: 1.5V x 4 PCS (AAA SIZE) UM-4 R03.

Battery Life: 200 hours typical with carbon zinc battery.

Auto power off: 30 minutes

Dimensions: 160mm(H) x 83mm(W) x 38mm(D)

Weight: Approx. 270g including batteries.

Supplied Thermocouples (1 per input):

1 meter (40") type K insulated beaded wire thermocouple. Maximum insulation temperature is 482°C (900°F). Thermocouple accuracy is $\pm 1.1^\circ\text{C}$ or 0.4% of reading (whichever is greater) from 0°C to 1250°C.

SPECIFICATIONS

ELECTRICAL

Temperature Scale: Celsius or Fahrenheit user-selectable.

Measurement Range:

J-TYPE -200°C to 1050°C, (-328°F to 1922°F)

K-TYPE -200°C to 1370°C, (-328°F to 2498°F)

Resolution: 0.1°C or 0.2°F

Accuracy: Accuracy is specified for operating temperatures over the range of 18°C to 28°C (64°F to 82°F), for 1 year, not including thermocouple error.

$\pm(0.05\% \text{ rdg} + 0.3^\circ\text{C})$ -50°C to 1370°C

$\pm(0.05\% \text{ rdg} + 0.7^\circ\text{C})$ -50°C to -200°C

$\pm(0.05\% \text{ rdg} + 0.6^\circ\text{F})$ -58°F to 2498°F

$\pm(0.05\% \text{ rdg} + 1.4^\circ\text{F})$ -58°F to -328°F

Temperature Coefficient:

0.1 times the applicable accuracy specification per °C from 0°C to 18°C and 28°C to 50°C (32°F to 64°F and 82°F to 122°F).

Input Protection:

24V dc or 24V ac rms maximum input voltage on any combination of input pins.

Maximum Differential Common Mode Voltage (Maximum Voltage T1 during measurement): 1 volt.

Reading Rate: 1 sample/second.

OPERATING INSTRUCTIONS

1. O Power Switch

The O key turns the thermometer on or off. In the SET mode the unit cannot be powered off. Exit SET mode to power off.

APO function mode

Press O power key for more than 6 seconds to disable the auto power off function. The display will show "APO OFF".

2. $^\circ\text{C}/\text{F}$ Selecting the Temperature Scale

Readings are displayed in either degrees Celsius($^\circ\text{C}$) or degrees Fahrenheit($^\circ\text{F}$). When the thermometer is turned on, it is set to the temperature scale that was in use when the thermometer was last turned off. To change the temperature scale, press the $^\circ\text{C}/\text{F}$ key.

3. *2S Button (only Main display)

Press this key to enter the Data Hold mode, the "HOLD" annunciator is displayed. When HOLD mode is selected, the thermometer holds the present readings and stops all further measurements. Press the HOLD key again to cancel HOLD mode and resume measurement. In the MIN/MAX recording mode, press HOLD key to stop recording. Press HOLD key again to resume recording. (Previously recorded readings are not erased).

Backlight function mode

Press the HOLD button for more than two seconds to turn on the backlight. Press the button again for more than two seconds to turn off the backlight. The backlight will switch-off automatically after 30 seconds.

4. Cold Junction Temperature Display mode (second display)

Press C.J. TEMP key to display the thermocouple input connector cold junction temperature on the second display. Press C.J. TEMP key again to exit this mode.

5. K/J Input Type Selection

The K/J key selects the thermocouple type. When the thermometer is turned on, it is set to the type selected when the thermometer was last turned off.

6. MIN MAX with Elapsed Time Mode

Press MIN MAX key to enter the MIN MAX Recording mode, (displays the Maximum reading with time, Minimum reading with time and Average reading stored in record mode). In this mode the automatic power-off feature is disabled and O key, $^\circ\text{C}/\text{F}$ key, REL key, SET key, Hi/Lo Limits key, K/J, C.J. TEMP and Recall keys are disabled. The beeper emits a tone when a new minimum or maximum value is recorded. The current temperature reading displayed on second display. Push the MIN MAX key to cycle through the MAX, MIN and AVG readings. If an overload is recorded, the averaging function is stopped. In this mode, press the HOLD key to stop the recording of readings, all values are held, press again to restart recording.

To prevent accidental loss of MIN, MAX and AVG data, this mode can only be cancelled by pressing and holding the MIN MAX key for 2 seconds. All recorded readings are erased.

7. REL Relative mode

Press the REL key to enter the Relative mode, zero the display, and store the displayed Reading as a reference value. The REL annunciator is displayed. The current temperature reading displayed on the second display. Press REL key again to exit the relative mode. The relative value can also be entered by the user. (See "SET mode" later in this manual.) When the desired Relative value has been entered, press REL key to enter the Relative mode, press SET key use the set Relative value as a reference value. Press REL key again to exit the relative mode. In the Relative mode, the val (can not $>\pm 3000.0$ counts) shown on the LCD is always the difference between the stored reference and the present reading.

8. Sec. Minu. Selecting the Elapsed Time scale

Press this key to display the elapsed time on the third display in either hours and minutes or minutes and seconds. When the thermometer is turned on, it is set to seconds. To change the time scale, press Sec. Minu. key. Maximum elapsed time reading is 100 hours. If 100 hours is exceeded, the elapsed time resets to zero.

9. SET mode (Relative value set, Elapsed Time set and Hi/Lo Limits value set)

- Press the SET key to enter Relative value SET mode (Press ENTER key to skip setting relative value). **= = = =** is displayed on the main display. The Relative value is entered via overlay numbers, press overlay ENTER key to store the relative value, and advance to elapsed time set mode.
- Elapsed Time set mode, (Press ENTER key to skip Elapsed Time set mode) **= = = = : =** is displayed in second and third display. Time (hours, minutes, seconds) value is entered via overlay numbers, press overlay ENTER key to store Time value. Elapsed Time starts from set time value.
- Hi Limit value set mode, **Hi** is displayed (Press ENTER key to skip Hi Limit value set mode), **= = = =** is displayed in main display, Hi Limit value is entered via overlay numbers, then press ENTER key to store the Hi Limit value. **= = = =** is displayed in main display, Lo Limit value is entered via overlay numbers, then press overlay ENTER key to store the Lo Limit value and exit SET mode.
- When the thermometer is turned on it uses the Relative value and Hi/Lo Limits values that were entered when thermometer was last in use.

10. Relative value Recall display mode.

Press REL RECALL key to display the Relative set value on second display. Press REL RECALL key again to exit this mode.

11. Hi/Lo Limits value Recall display mode

Press Hi/Lo RECALL key to display the Hi Limit value on second display. Press Hi/Lo RECALL key again to display the Lo Limit value on second display. Press Hi/Lo RECALL key again to exit this mode.

12. Hi/Lo Limits mode (only Main display)

Press Hi/Lo Limits key to enter the Hi/Lo Limits comparative mode. **Hi** is displayed. When the input temperature value exceeds the Hi or Lo Limit value, the beeper emits a continuous or pulse tone. Press Hi/Lo Limits key again to exit the Hi/Lo Limits mode.

OPERATOR MAINTENANCE

WARNING

To avoid possible electrical shock, disconnect the thermocouple connectors from the thermometer before removing the cover.

Battery Replacement

- Power is supplied by 4pcs 1.5V (SIZE AAA) R03P.
- The **“+/-”** appears on the LCD display when replacement is needed. To replace battery remove screw from back of meter and lift off the battery cover.
- Remove the battery from battery contacts and replace.
- When not in use for long periods the batteries should be removed.
- Do not store in locations with high temperatures, or high humidity.

Cleaning

Periodically wipe the case with a damp cloth and detergent, do not use abrasives or solvents.



OMEGA[®]
On-Line Service
omega.com

Internet e-mail
info@omega.com

Servicing North America:

U.S.A.: ISO 9001 Certified
One Omega Drive, Box 4047
Stamford, CT 06907-0047
Tel: (203) 359-1660
FAX: (203) 359-7700
e-mail: info@omega.com

Canada:
976 Berger
Laval (Quebec) H7L 5A1, Canada
Tel: (514) 856-6928
FAX: (514) 856-6886
e-mail: info@omega.ca

For immediate technical or application assistance:

U.S.A. and Canada:
Sales Service: 1-800-826-6342 / 1-800-TC-OMEGA[®]
Customer Service: 1-800-622-2378 / 1-800-622-BEST[®]
Engineering Service: 1-800-872-9436 / 1-800-USA-WHEN[®]

Mexico:
En Espaⁿol: (001) 203-359-7803
FAX: (001) 203-359-7807
e-mail: espanol@omega.com
info@omega.com.mx

Servicing Europe:

Czech Republic:
Frýzská 184, 733 01 Karvina[®], Czech Republic
Tel: +420 (0)59 6311899
FAX: +420 (0)59 6311114
Toll Free: 0800-1-66342
e-mail: info@omegashop.cz

United Kingdom
ISO 9002 Certified
One Omega Drive
River Bend Technology Centre
Northbank, Irlam
Manchester M44 5BD

Germany/Austria:
Daimlerstrasse 26, D-75392
Deckenpfronn, Germany
Tel: +49 (0)7056 9398-0
FAX: +49 (0)7056 9398-29
Toll Free in Germany: 0800 639 7678
e-mail: sales@omega.de

United Kingdom
Tel: +44 (0)161 777 6611
FAX: +44 (0)161 777 6622
Toll Free in United Kingdom:
0800-488-488
e-mail: sales@omega.co.uk

It is the policy of OMEGA Engineering, Inc. to comply with all worldwide safety and EMC/EMI regulations that apply. OMEGA is constantly pursuing certification of its products to the European New Approach Directives. OMEGA will add the CE mark to every appropriate device upon certification.

The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a “Basic Component” under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/ DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

- Purchase Order number under which the product was PURCHASED,
- Model and serial number of the product under warranty, and
- Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

- Purchase Order number to cover the COST of the repair,
- Model and serial number of the product,
- Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

© Copyright 2007 OMEGA ENGINEERING, INC. All rights reserved. This document may not be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine-readable form, in whole or in part, without the prior written consent of OMEGA ENGINEERING, INC.

Where Do I Find Everything I Need for Process Measurement and Control? OMEGA...Of Course! Shop online at omega.com

TEMPERATURE

- Thermocouple, RTD & Thermistor Probes, Connectors, Panels & Assemblies
- Wire: Thermocouple, RTD & Thermistor
- Calibrators & Ice Point References
- Recorders, Controllers & Process Monitors
- Infrared Pyrometers

PRESSURE, STRAIN AND FORCE

- Transducers & Strain Gages
- Load Cells & Pressure Gages
- Displacement Transducers
- Instrumentation & Accessories

FLOW/LEVEL

- Rotameters, Gas Mass Flowmeters & Flow Computers
- Air Velocity Indicators
- Turbine/Paddlewheel Systems
- Totalizers & Batch Controllers

pH/CONDUCTIVITY

- pH Electrodes, Testers & Accessories
- Benchtop/Laboratory Meters
- Controllers, Calibrators, Simulators & Pumps
- Industrial pH & Conductivity Equipment

DATA ACQUISITION

- Data Acquisition & Engineering Software
- Communications-Based Acquisition Systems
- Plug-in Cards for Apple, IBM & Compatibles
- Datalogging Systems
- Recorders, Printers & Plotters

HEATERS

- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

ENVIRONMENTAL MONITORING AND CONTROL

- Metering & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater Treatment
- pH, Conductivity & Dissolved Oxygen Instruments